

Introducing Feedback Report : Free and Open-Source Software for Supporting Measurement-based Care in Alcohol Use Disorder Treatment

Background

Measurement-based care is the evidence-based practice of administering standardized measures throughout treatment to monitor clinical progress.

However, measurement-based care is rarely used in community-based alcohol use disorder (AUD) treatment (Goodman et al., 2013), in part because measures may need to be manually administered, scored, recorded, and graphed. These workflow-related barriers can interfere with other clinical demands.

Aim: To address these barriers, we developed free software that automatically administers, scores, records, and graphs quantitative measures of clinical progress to support measurement-based care in AUD treatment.

Method

A web-based dashboard, called Feedback Report, was developed using code we developed to run on the free R software platform (R Core Team, 2020).

Feedback Report uses an existing REDCap platform (Harris et al., 2009) to create and manage surveys, send patients links to weekly surveys via email or text message, and securely store patients' survey responses. Data are automatically imported from REDCap using the R `redcapAPI` package (Nutter et al., 2020).

An interactive dashboard displays line graphs and tables for viewing changes in patient-reported progress and goal measures over time across multiple domains (e.g., drinking, craving, coping skills, depression, treatment goals). See Figures 1-4.

Layouts that are optimized for both computer (Figures 1-4) and smartphone (Figure 5) are available.

Users can easily customize Feedback Report to display different quantitative self-report measures, including custom measures selected or created by users. For example, users can choose which measures to display and how to display them by modifying an Excel spreadsheet (Figure 6).

Conclusions

Feedback Report is a free and customizable measurement-based care software that was designed to support measurement-based care in AUD treatment research. Future research may evaluate ways to improve its usability, clinical utility, and implementation in community-based AUD treatment settings.

References

Goodman, J. D., McKay, J. R., & DePhilippis, D. (2013). Progress monitoring in mental health and addiction treatment: A means of improving care. *Professional Psychology: Research and Practice*, 44(4), 231–246. <https://doi.org/10.1037/a0032605>

R Core Team (2020). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL <https://www.R-project.org/>.

PA Harris, R Taylor, R Thielke, J Payne, N Gonzalez, JG. Conde, Research electronic data capture (REDCap) – A metadata-driven methodology and workflow process for providing translational research informatics support, *J Biomed Inform.* 2009 Apr;42(2):377-81.

Nutter B, Lane S (2020). *redcapAPI: Accessing data from REDCap projects using the API*. doi: [10.5281/zenodo.11826](https://doi.org/10.5281/zenodo.11826).

Results

The figures below illustrate key features of Feedback Report, an interactive dashboard for addiction measurement-based care.

Figure 1. An interactive line graph displays changes in a patient's drinking over time.

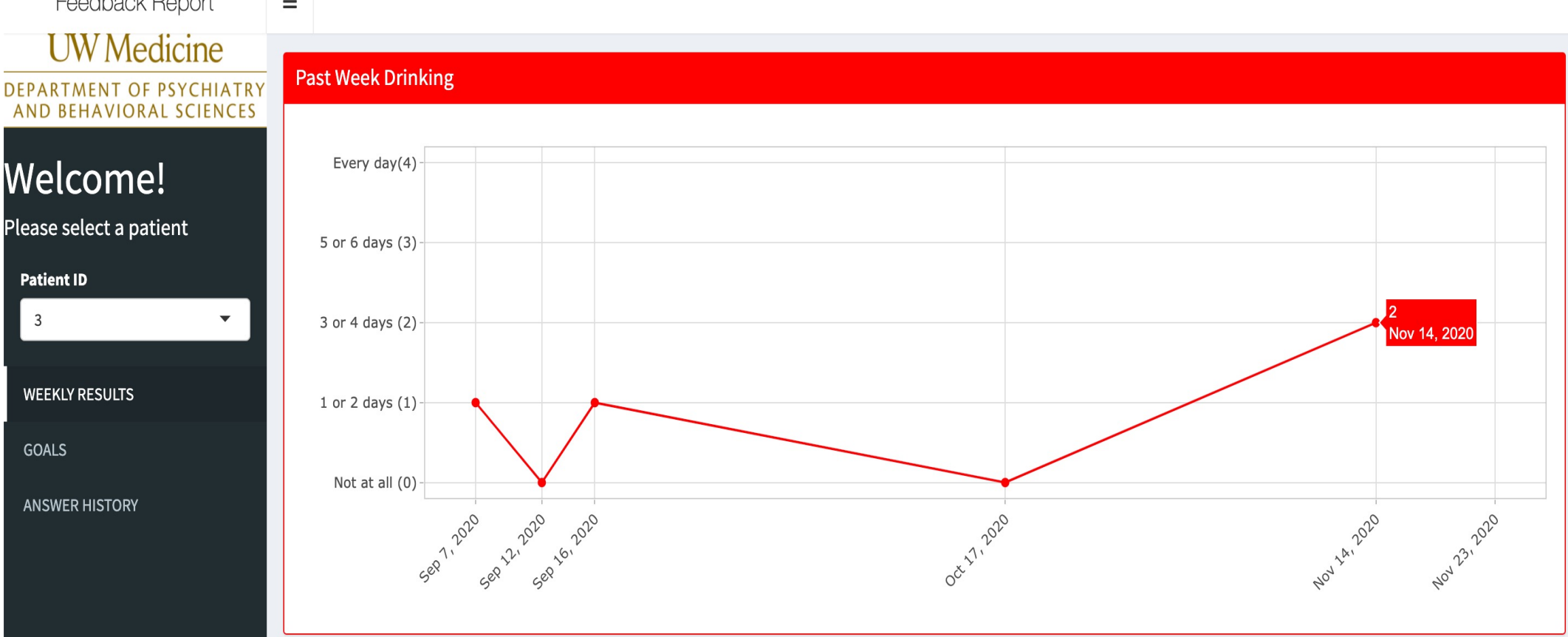


Figure 2. A detailed history of a patient's survey responses are shown in an answer history table.

Answer History Table		Last completed questionnaire on 2020-11-23					
		2020-09-07	2020-09-12	2020-09-16	2020-10-17	2020-11-14	2020-11-23
Substance Use and Craving							
In the past 7 days...							
I have drank too much		On 1 or 2 days	Not at all	On 1 or 2 days	Not at all	On 3 or 4 days	NULL
I have used drugs		Not at all	Not at all	Not at all	Not at all	On 3 or 4 days	NULL
I have experienced cravings		On 1 or 2 days	On 1 or 2 days	On 1 or 2 days	On 1 or 2 days	On 5 or 6 days	NULL
Coping Strategies							
In the past 7 days...							
I have avoided people, places, and things that may lead to using alcohol or drugs		Most of the time	Most of the time	A fair amount of the time	Always	Just a little	NULL
I have engaged in activities that can replace alcohol or drug use		Most of the time	Most of the time	Not at all	Not at all	Just a little	NULL
I have planned ahead for situations that could pose a high risk for drinking or using drugs		Just a little	Most of the time	Always	Just a little	Not at all	NULL
Confidence in Avoiding Alcohol/Drug Use							
In the past 7 days...							
How confident are you that you would not drink or use drugs if you were emotionally upset or in pain?		Somewhat confident	Extremely confident	Very confident	Extremely confident	Somewhat confident	NULL
How confident are you that you would not drink or use drugs if you felt an urge or craving?		Moderately confident	Very confident	Moderately confident	Very confident	Moderately confident	NULL
Positive Outlook on Life							
In the past 7 days...							
I have felt happy with my overall quality of life		Always	Most of the time	Most of the time	Always	Most of the time	NULL
I have had realistic hopes and goals for myself		Most of the time	Most of the time	Always	Always	Not at all	NULL

Figure 3. An interactive line graph displays multiple patient outcomes overlayed within a single graph to show associations between different outcomes.

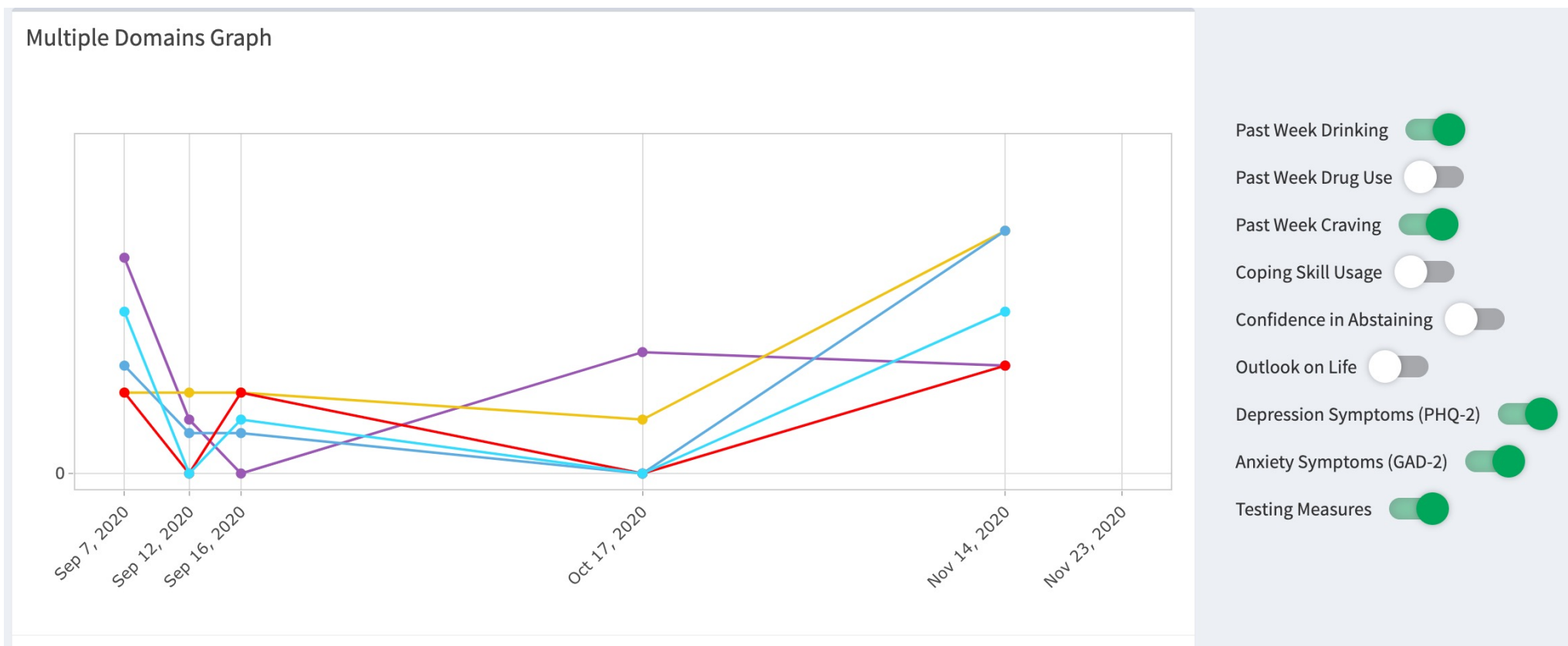


Figure 5. A smartphone layout of feedback report supports the use of this tool on mobile devices. Click the Play button below to view a 20 second demo.

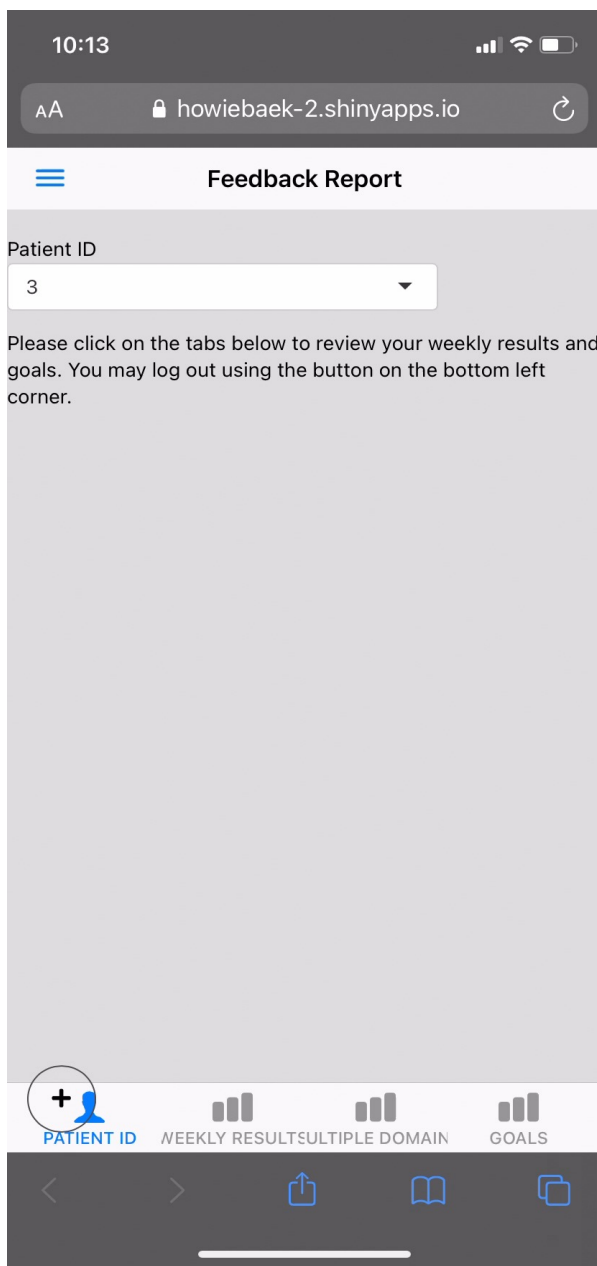


Figure 4. An interactive line graph displays changes in a patient's treatment goals over time.

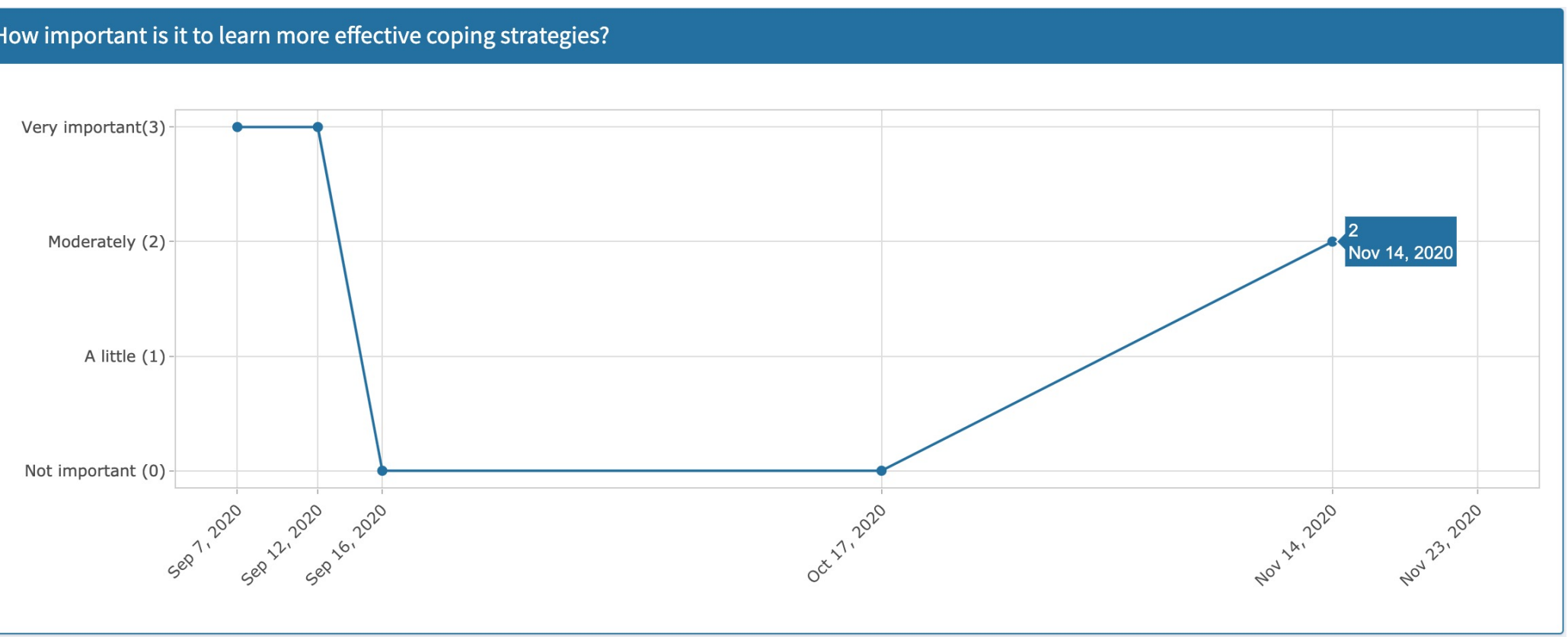


Figure 6. A spreadsheet can be easily edited by researchers or clinicians to modify which measures are displayed and how they are displayed.

measure_name	measure_display_name	measure_form	ylim_lower	ylim_upper	line_color
drinking_total	Past Week Drinking	drinking_1	0	4	#FF0000
druguse_total	Past Week Drug Use	druguse_1	0	4	#7e6948
craving_total	Past Week Craving	craving_1	0	4	#f1c411
coping_total	Coping Skill Usage	coping_1 + cop	0	12	#2471a1
confidence_tot	Confidence in Abstaining	confidence_1 +	0	8	#219954
outlook_total	Outlook on Life	outlook_1 + ou	0	8	#a04000
depression_tot	Depression Symptoms (PHQ-2)	depression_1 +	0	6	#Seade2
anxiety_total	Anxiety Symptoms (GAD-2)	anxiety_1 + an	0	6	#9b58b5
goal_drinking	How important is it to reduce or abstain from drinking or	goals_1	0	3	#FF0000
goal_craving	How important is it to reduce your cravings to drink or use	goals_2	0	3	#f1c411
goal_coping	How important is it to learn more effective coping strateg	goals_3	0	3	#2471a1
goal_outlook	How important is it to have a more positive outlook on life	goals_4	0	3	#a04000
goal_mentalhe	How important is it for you to work on your depression, a	goals_5	0	3	#Seade2
ptsd_total	Post-Traumatic Stress Disorder (PTSD)	ptsd_1	0	4	#00FF00
testing_total	Testing Measures	test_1	0	6	#33DDFF